OPTIMAL PORTFOLIO MANAGEMENT IN ALASKA: A CASE STUDY ON RISK CHARACTERISTICS OF ENVIRONMENTAL CONSULTING COMPANIES

By

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Abstract

Sharp declines in global oil prices have led to a marked contraction in Alaska's natural resource dependent economy. This, coupled with record the State's budgetary shortfalls and a decrease in incoming federal dollars, has created a climate where environmental consulting companies must accept riskier projects to balance portfolio growth and security. As a result, companies must adopt a risk-based portfolio management approach as both a high level strategy and a core management practice. It is important to specifically identify projects best suited for an organization's tolerance for risk based off of the supply and demand of the industry in rapidly changing economic conditions. Therefore, the aims of this project report are to help environmental consulting companies identify risk characteristics and manage their portfolio, as well as develop a tool to guide decision-making and selecting projects best suited for a companies' portfolio strategy. The results of this research may provide Alaska based environmental companies with a clear understanding of the types of projects that offer both development and financial security for an organization. This research paper will present the methodology, results, and an environmental consulting portfolio management tool.

Key Words

Portfolio Management
Alaska
Environmental Consulting
Risk Averse
Portfolio Management Tool
Risk Management
Project Selection

Introduction

Business Case

Due to a drop in oil prices, Alaska has been experiencing hard economic times. As a result, many environmental consulting companies have to be more competitive in a tight market. However, many companies have become more risk averse rather than risk tolerant with regard to the types of projects they choose to include in their portfolios as they work to build growth and provide financial security. For companies to become both successful and survive the current economic climate, they will need to have a portfolio with a balance of high risk and low risk projects. Environmental consulting companies in Alaska will need an understanding of their high risk events and a tool to help them manage projects with associated high risk in their portfolio. For these reasons, the research proposed in this project will be of value to the environmental consulting industry in Alaska.

Project Purpose

The purpose of this project is to investigate and examine environmental companies in Alaska with respect to their risk characteristics and development an appropriate project portfolio management (PPM) tool to assist companies in balancing growth while maintaining financial stability. With a forecast of an increase in jobs lost in 2016 and more State budget cuts, companies, states and governments are reducing the amount of funding they have for non-essential projects, see Exhibit 1. Financial pressure can certainly be felt in the environmental consulting industry, and has specifically been seen with oil and gas companies no longer exceeding regulatory expectations, rather they are only doing what is required by the state in the environmental sector. The net effect has been more environmental companies bidding on fewer projects.

This project is research-based, utilizing interviews and surveys with environmental firms in Alaska to generate data. In addition, leading and current academic research and seminal papers on current theories and practices on the topics of portfolio, project and risk management will be applied to the data analysis and synthesis of recommendations.

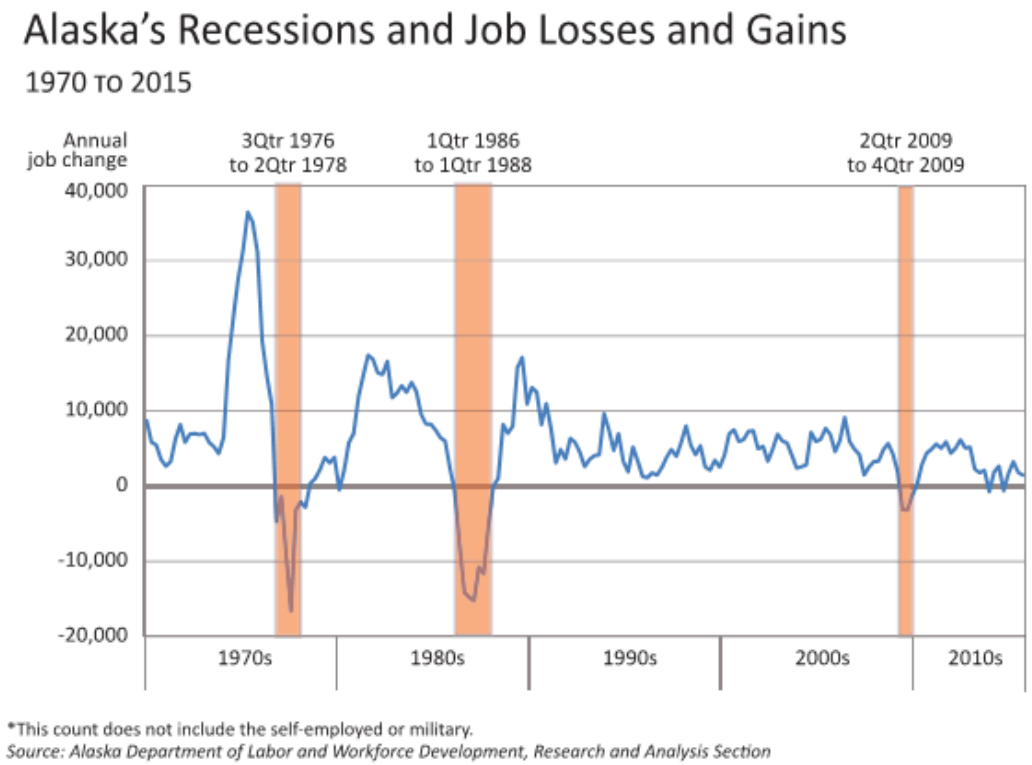


Exhibit 1: Alaska Recessions and Job Losses and Gains

Scope Description

The scope of this project is to plan, execute, monitor and control and closeout a research paper that focuses on Optimal Portfolio Management in Alaska for Environmental Consulting Companies. In addition this research will include a project management plan encompassing literature reviews, surveys and interviews, a data and result analysis, subsequent development of a PPM tool for environmental consulting companies, a final presentation and a thirty to forty-page research paper with the results and findings of the research.

Project Objectives

In this project, the objectives include creating documents that meet the requirements of 686A and 686B, developing a project management plan, and executing, monitoring and controlling the project management plan. Data will be collected and analyzed via a written report, and a portfolio management tool will be created. All of this will culminate in a presentation of results in front of an audience showing a comprehension in the knowledge areas of risk management, communication management, and stakeholder management.

Background

This project is intended to identify a strategy and tool for helping environmental consulting companies in Alaska manage projects in their portfolios. Project portfolio management and risk management are directly aligned when it comes to managing projects and therefore a risk-based portfolio management becomes crucial to environmental consulting companies during periods of economic downfall. It is important to strategically identify the types of projects best suited to a company's portfolio based on the supply and demand while factoring in a long term view of the economics in the industry.

Literature Review

The research and findings of the literature review has been divided into two main areas of focus: project portfolio management and risk management. Each section identifies the current knowledge, as well as theoretical and methodological contributions of both project portfolio management and risk management.

Project Portfolio Management

Project portfolio management, or simply portfolio management, is defined by the Project Management Institute (PMI) as the "centralized management of one or more portfolios that enable executive management to meet organizational goals and objectives through efficient decision making on portfolios, projects, programs and operations" (PMI, 2013).

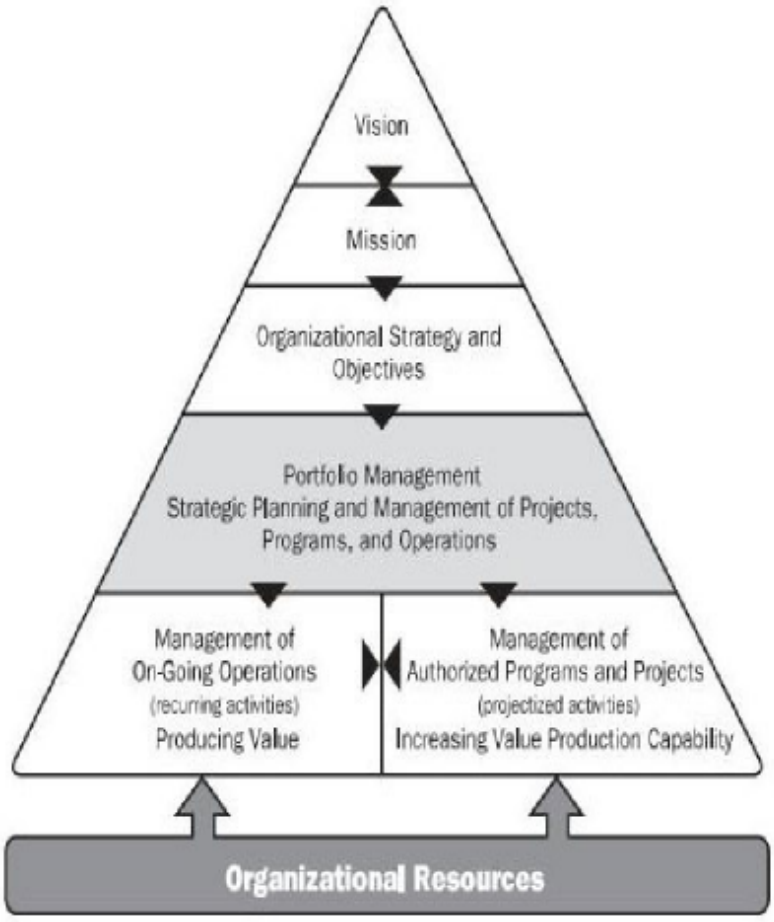
Portfolio management is meant to provide influence to project selection and execution. It can also provide a strong and profitable organization in a changing organizational environment. An organization can work to influence an organization's strengths by effectively managing resources, capitalize on opportunities, manage stakeholders, minimize impacts of risk or threats, respond to changes in the market, and keep the focus on crucial operational activities.

Portfolio management, program management, and project management are all intertwined and all work to contribute to an organizations strategy for growth and profitability. Portfolio management becomes important as selecting the right programs or projects, prioritizing work, and providing resources is crucial to the success of a company.

Program management is meant to bridge the gap between project and program components, as it is the process of managing several related projects with the intent of improving an organization's performance. This interdependence assists in realizing specified benefits.

Project management is meant to achieve a specific scope that is often driven by the program or portfolio which fall under the umbrella of an organizations strategies. (PMI, 2013)

The exhibit below shows the relationship between the programs, projects, and operational processes in an organization:



Source: Project Management Institute (2013) The Standard for Portfolio Management. Newton Square: PMI publications

Exhibit 2: The Organizational Context of Portfolio Management

Portfolio Optimization

Portfolio optimization is meant to evaluate an organization's selection criteria. This also includes using a ranking or scoring system for the components of the portfolio then using this information to create a portfolio component mix with the highest potential to support an organizations strategy as a whole.

In addition, portfolio optimization also allows for a portfolio to maximize its return within the organizations predefined risk profile and tolerances through planning and allocating resources according to the organizational strategy. Balancing the portfolio and keeping it in line with the organizations

objectives is the most important aspect of portfolio optimization. An organizations objectives and strategy and goals can be related to operational performance, financial, or organizational development. Evaluating these trade-offs within the portfolio is crucial; management of risk and return, balancing short-term goals against long-term goals, and balancing project types to align with the organization strategy and objectives are among the types of trade-offs.

There are six key characteristics that are within portfolio optimization. This includes development of a scoring or ranking criteria, performing a risk analysis on portfolio components based on the organizations risk tolerance and risk profile. Determining resource capability, capacity and resource constraints are important, as well as determining which portfolio components should have the highest priority within the portfolio. Utilizing the organizations risk profile, performing a risk analysis on the components of the portfolio and identifying portfolio components to be suspended, reprioritized, or terminated make up the final key characteristics and activities that are within portfolio optimization (PMI, 2013).

Project Risk Management

Project Risk Management can be defined as "the systematic process of identifying, analyzing, and responding to risk as project-related events, or managerial behavior that is not definitely known in advance, but that has potential for adverse consequences on a project objective" (Hulett, D.T., 2013). Risk can, in theory, endanger the ability of the project manager to meet the predefined project objectives of scope, time and cost. When risk is realized, suddenly tasks may take longer than planned, negatively impacting the project manager's fulfillment of the project objectives. Due to the potential adverse influence over a project's performance, the PMI acknowledges the management of risk as one of its nine key knowledge areas (Hulett, D.T., 2013). There are four main stages of project risk:

- **Planning** – define activities that should be taken to approach project risks
- **Identification** – single out risks that may affect the projects objectives
- **Analysis** – evaluates quantitatively or qualitatively the likely consequences of risks as well as the likelihood of occurrence
- **Response** – develop procedures and techniques to mitigate the defined risks, enabling the project manager to identify risks during the project and to implement risk response plans

Another area of project risk management is ignorance, or a lack of true knowledge. The process of project risk management requires the project manager to expose risks for the purpose of analyzing and responding to them. However, the exposure may create anxiety among stakeholders, and negative thoughts may be suppressed rather than vocalized during the project lifecycle (Kutsch and Hall, 2009). Project managers may limit the degree to which they identify new risks, which can negatively affect the

project over time. Risks, although legitimate, may be suppressed during the risk identification phase and ultimately ignored (Kutsch and Hall, 2009).

There is lack of statistical data for predicting future risks; project managers rely on subjective estimates. However, other stakeholders may not believe the credibility of these estimates. During the phases of risk identification and risk analysis, stakeholders might disagree over which risks are considered to be 'true' with the result, that some risks will be deemed as not pertinent and, as a result may be excluded from any active management (Kutsch and Hall, 2009).

Project managers can have a difficult time putting risk into words. Often the risks are 'soft risks', which can be related back to the human factor. People are the most important contributor to risk management effectiveness for both good and bad.

One way to reduce anxiety among those who have a vested interest in the project (a stakeholder) is to discuss the uncertainties with them and explain that not all risks are meant to indicate a negative affair. Stakeholders are more concerned with the exposure to potential adverse external opinion of failure than with the possible impact of uncertainties' on the project, that they downgrade their actual perceived risk to a desired external accepted level of risk that can be safely engaged through risk management without the side effects of dread (Kutsch and Hall, 2009). This is not the case for all stakeholders, but certainly the majority.

Executing actions to mitigate risks requires a commitment of resources, such as time and money. Resources are not committed in advance to respond to risks that are not certain to occur but the project sponsor may be unwilling to spend money and energy on a management process without knowing it has definite benefits.

Oftentimes project managers view identifying risks as checking a box. Project managers are supposed to follow formal procedures despite a feeling of powerlessness and alienation. In an extreme case, fatalistic tendencies result in pure defiance and a resistance to apply any form of proactive management of risk.

Almost every risk may be of interest, but the management of risk requires information about threat, probability, and response. Current project risk management processes do not propose any prescriptive process to define the relevance of risk apart from a ranking of risks according to their threat and their likelihood of occurrence (Kutsch and Hall, 2009).

There are many lessons learned in project risk management. For one, the greatest risk driver is often overlooked. Often inappropriate attention may be given to one risk over another and a risk driver may impact all aspects of risk on a project and the integrated result may be improperly estimated. The most

critical step of risk management is risk identification and it is often poorly done. In addition, all projects must include sufficient resources in the project's planning activity to adequately provide for training to enforce participation in the risk identification process. The project manager must also validate the tools and input data, this should be done early in the lifecycle of the project. Risk management must evolve with the project and its ever-maturing needs. Effective risk management processes can succeed by changing the organizational culture to motivate the individual. These cultural changes require time and repetition before they are firmly embedded into an organization (Sullivan and Sylvester, 2006).

Risk Tolerance

Risk tolerance has three different perspectives when involved in a project: Organization, Project Manager, and Stakeholder. An organization's risk tolerance varies according to the organization's financial stability and project diversification. A project manager's risk tolerance is affected by job security and corporate culture. The stakeholder's risk tolerance is influenced by a project objective. (Kwak and LaPlace, 2004). Issues involving risk are difficult to distinguish and misunderstood by those making vital decisions for organizations and projects. Risk is not tangible or visible; therefore, manager's risk perceptions in a particular project varies by risk characteristics and a project's internal and external environment. This makes it important to define 'risk' and 'risk tolerance' as it relates to project management. Risk is generally understood to be the distribution of possible outcomes, their likelihood, and their subjective values. In project management, this can be applied to time, cost, performance, and many other influential factors in a project that may impact these three concerns. One thing to note is that project managers, organizations, and stakeholders rarely share the same view or opinion of what the possible outcomes are for a project, much less their likelihood. Risk tolerance is a subjective notion in the absence of clear and uniform communication and tools for risk analysis. As a result, risk tolerance is still a developing area of research because of its human dynamics (Kwak and Stoddard, 2003).

Project Methodology

Initiation

A scope and project charter was created in January 2016 as part of the initiation portion of planning this project. This included the selection of a project sponsor and a three-person Student Advisory Committee (SAC).

The SAC was considered in the stakeholder power/interest grid to have high interest and high power in this project as the SAC oversees the application and mastery of the three chosen project management principles which in this case were: risk management, stakeholder management and communication management. Two project management faculty members were selected for the committee as well as one

faculty member from the Masters of Business Administration (MBA) School. Having three SAC members from the academic community proved positive as they were all familiar with the schedules and deadlines within the University.

During the initiation phase of the project, it was important to shape the project around creation of a tool that would provide value to environmental consulting companies. The project was geared towards providing a portfolio management tool that could assist organizations in determining which projects would be best suited to be included in their portfolios.

Planning

A detailed project management plan was created during the planning portion of the project. The plan was developed throughout the spring 2015 semester. This included fleshing out the full scope of PMP subsidiary plans to include the change management plan, metrics management plan, risk management plan, stakeholder management plan, and a schedule management plan.

The most challenging part of the planning of the project was developing a PMP that could guide the PM during the execution phase of the project. A robust requirements traceability matrix was created as well as a substantial stakeholder register. However, the risk management portion of the PMP proved to be the most inaccurate as unanticipated risks occurred throughout the lifecycle of this project and constant monitoring had to be done on how this affected the project during the execution phase. At the start of the 2016 fall semester, an evaluation was done of the previously identified risks and the risk register was updated to better reflect the new risks that were occurring. A significant risk not previously identified consisted of an extended field project in Hawaii with the project manager's employer. The project manager did not anticipate this as the field project in Hawaii was to be completed in April 2016 and it was not completed until September 2016. A second risk not previously identified were delays associated with sending out an Alaska focused risk management survey. This was a critical task that slipped significantly on the project schedule.

Stakeholder Identification

A significant amount of effort went into identifying stakeholders for this project. Due to the fact that the portfolio management tool was designed around the feedback from stakeholders, there were many different entities involved and the power/interest matrix in which they were classified assisted in providing a way to identify those with the most power and the most interest. It was determined that it was most important to keep satisfied, those individuals working in environmental consulting companies as their input was integral to developing the portfolio management tool.

Execution

The execution of this project began during the summer of 2016, however the majority of the tasks were completed during the fall 2016 semester. This phase consisted of reviewing and updating the PMP as well as executing the project which was the creation of the portfolio management tool. Data was collected, data analysis was done and a literature review was conducted during this phase.

During the creation of the product, it was determined that taking the data from the surveys and creating a portfolio management tool that could be automated, was out of the scope for this project. The project manager realized that an example could be provided and a scoring system could be created based off of the data that was collected, but further research would need to be done to create a tool that formulated and calculated responses with an interactive portfolio management scoring system.

Additionally, there was a change during the execution of the project, the initial project title of gathering data solely on risk averse consulting companies was difficult to quantify. Therefore, the project focused on risk characteristics of environmental consulting companies which allowed for a strong gathering of data with the participation of more organizations.

Monitoring and Controlling

Monitoring and controlling was most prevalent during the 2016 fall semester. The change management plan, metrics management plan, stakeholder management plan and risk management plan were heavily utilized.

The change management plan proved to be a valuable tool as changes were made to the abstract, the approach, as well as the portfolio management tool. The changes were considered, approved and implemented by the project manager. The change management request form accurately documented the need for the change and what areas of the project would be affected by the change. Once the change request was accepted, it was documented in the change request log and implemented in the project. The need for an in-depth change management plan was eliminated because there was no cost associated with this project. A total of three changes were requested, approved, and documented.

The stakeholder management plan was also a vital tool utilized during the project. A detailed stakeholder register was developed with the idea of identifying and categorizing as many stakeholders as possible that could affect or be affected by the project. An analysis of the stakeholder's expectations was done to understand their impact on the project. The stakeholder register was valuable as it provided contact information, the preferred method of contact, measures of success, expectations, primary concerns and any other helpful information that was identified and associated with each stakeholder.

The risk management plan captured risks as they occurred during the project. A robust risk register was created and updated as risks occurred. There were nine risks originally identified and an additional three risks occurred throughout the lifecycle of the project. The additional risks that were added, resulted in in project delays as they were unanticipated and accounted for. Risk number 10 '*the project manager does not get surveys out to consulting companies in a timely manner'* was a critical task that caused delays throughout the remainder of the project. Additional time and effort was necessary to account for the delays during the 2016 fall semester. Three risks were added to the risk realization log. Dates, triggers, impact and whether or not they affected the scope were tracked in the log. This tracking resulted in documentation that may assist future projects of this nature.

Closeout

The closeout phase was completed during the last four weeks of the 2016 fall semester. A final report, final product, data analysis, literature review and final presentation was produced during the project closeout phase. A closeout plan was not included in the PMP, though the course requirements, acceptance criteria, and critical success factors documented in the PMP will provide the guidance to successfully closeout the project.

The period of performance on this project ended on December 5, 2016 after the final presentation. The final submission included a written report, a PowerPoint presentation, lessons learned, the knowledge area application write-up, the final PMP, the project charter, letters from the sponsor and any other relevant project information. The final product was delivered to the sponsor and the project will be considered complete.

Research Methodology

The method used for the project was analysis of a survey sent out to 25 people in Alaska within the environmental consulting arena. In addition, I reviewed current journal articles, textbooks, and existing publicly available content relating to risk management and project portfolio management were reviewed as well as textbooks on each subject. The literature review was used to provide a foundation for which the PPM tool was created, as well as provide the reader with the background and understanding of risk and portfolio management. The survey helped gather data to illustrate and understand risk characteristics in Alaska and identify trends - (if any -) of those working for different consulting companies. This aided in creating an Alaska specific PPM tool.

Description of Procedures

1. I notified a total of 25 people in the environmental consulting industry of the voluntary survey via email and telephone. The survey was conducted using Survey Monkey. Companies, job titles, age ranges, and experience levels varied in the effort to provide a survey that was unbiased in an effort to get a wide range of colleagues in the environmental consulting industry. Of the 25 people surveyed, there were 17 respondents - a response rate of 68%. Out of the 17 respondents, 16 surveys were utilized due to time constraints. There were eleven questions asked that were related to project risk in the environmental consulting industry in Alaska. Questions were either multiple choice or asked respondents to write in their answers. Those taking the survey were not required to answer every question, however the majority of respondents filled out the entire survey. The data gathered from the survey informed a qualitative analysis of the data.
2. A literature review was conducted of currently available journal articles and academic books.
3. A PPM tool specific to Alaska with an emphasis on risk was created based off of the results from the survey.
4. The PPM tool was sent to respondents to gauge their feedback and assess if the tool could be useful. This was done as part of the data validation portion of this project.

Presentation and Analysis of Data from Survey

Data analysis of the survey questions completed by 16 respondents was used as the guide to create the PPM tool.

Below is Exhibit 3 which depicts how long each respondent has been in the environmental consulting field:

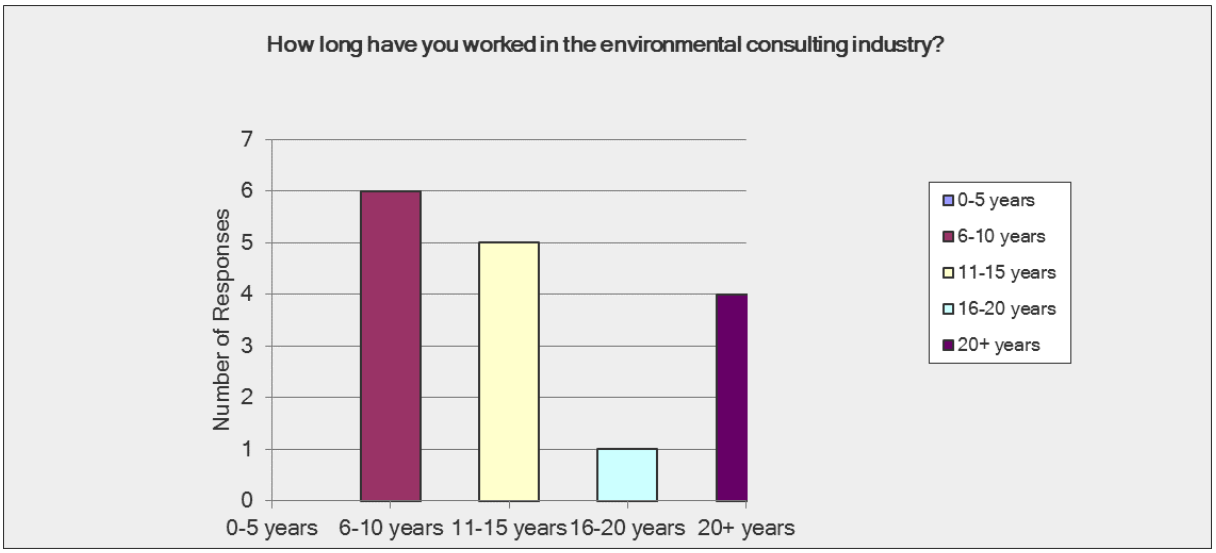


Exhibit 3: Environmental Consulting Industry Metrics for Respondents

Without any responses from anyone with 0-5 years of experience in the industry, and the majority of those taking the survey in the industry with 6-10 or 11-15 years of experience, data indicates that the respondents are mid to high level in the environmental consulting field.

The average company size of those surveyed was approximately 26-50 people as based on the results in Exhibit 4 below. For the purpose of this study, a 26-50- person company is considered a *medium-sized* company. Companies with staff size below that range is a small company and above the range is a *large* company. Therefore the majority of those surveyed work for medium sized companies in Alaska. Knowing the size of the organization assists in understanding the risk process of each organization.

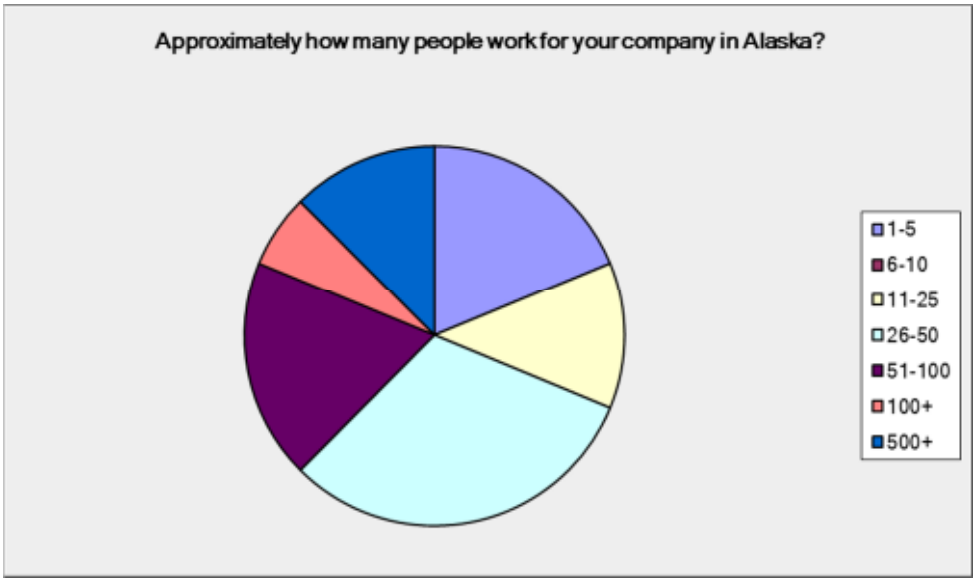


Exhibit 4: Average Organization Size of Respondents Companies

Approximately 31% of those surveyed worked for organizations that have 26-50 people working in Alaska. It can also be noted that there are small environmental consulting organizations in Alaska as well as larger firms, which may be evident of Native Alaskan Corporations or organizations that operate nationwide or worldwide.

After establishing the experience and company size of the respondents, the survey moved directly to its intended focus, which was risk. The survey question below in Exhibit 5 identifies the top six highest results. The top three risks that respondents felt were the most common in Alaska are clearly noted below. The top three risks were: weather, poor scope of work and logistics, site conditions or remoteness. This indicates that many organizations experience the same types of events that result in the most challenges affecting scope, schedule, or budget. This information was directly used to build the PPM tool.

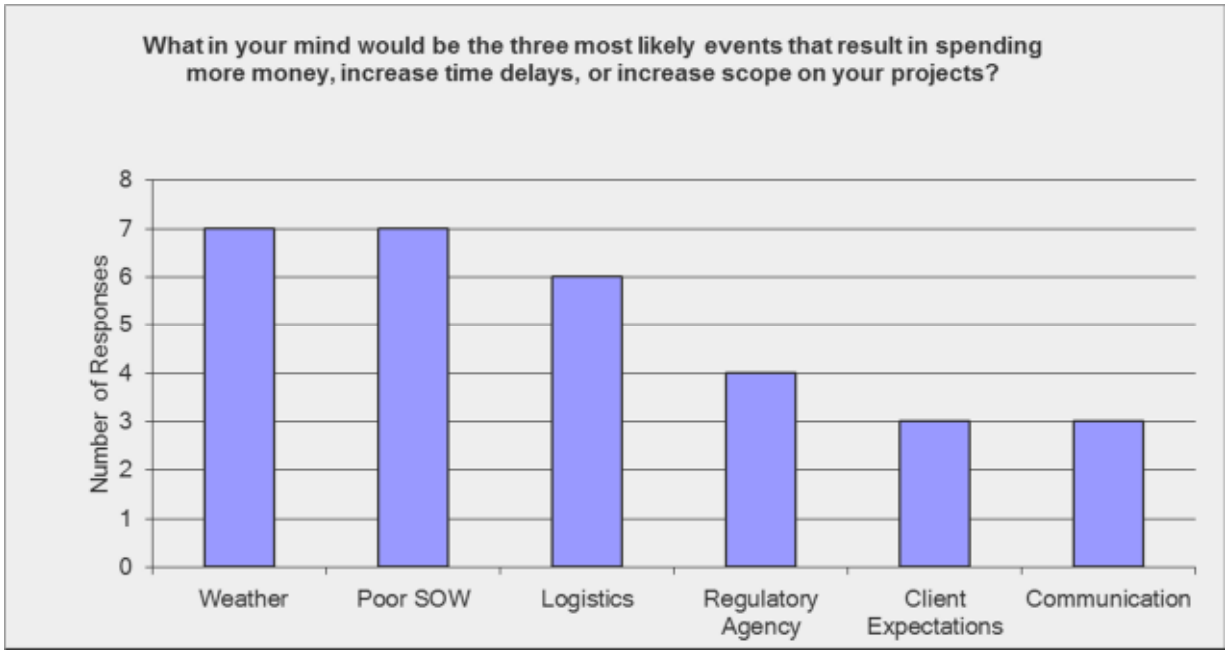


Exhibit 5: Highest Percentages of Answers Related to Project Risk

On the opposite spectrum, Exhibit 6 identifies the instances in which a project finished sooner than planned or under budget. The top opportunities or positive risks in this situation are identified in exhibit 4 as the intention was to identify if there were any consistencies among organizations in the industry. The top two most likely events that resulted in projects that came in under budget or finished ahead of schedule was a result of good planning and having the right team for the project.

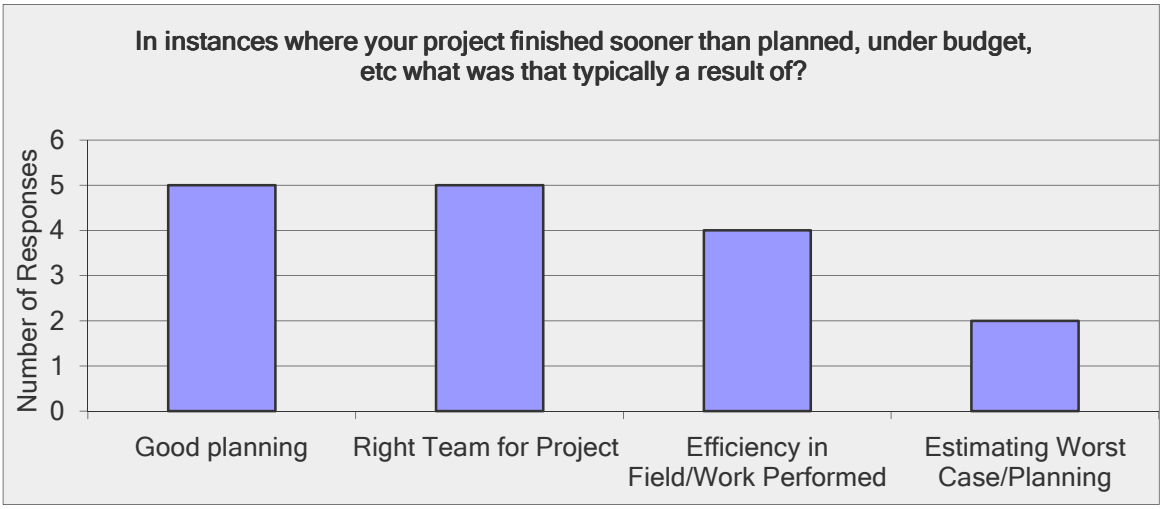


Exhibit 6: Top Four Reasons a Project May Finish Ahead of Schedule or Under Budget

Question number 6 that was asked in the survey was whether risks or opportunities occurred during project execution that made it clear the estimating process needed improvement. This question proved to have some of the more interesting answers. There were only three answers that had more than one response which resulted in recording the top three answers, however all of the answers were well thought out and very relevant to work conducted in Alaska as shown in Exhibit 7.

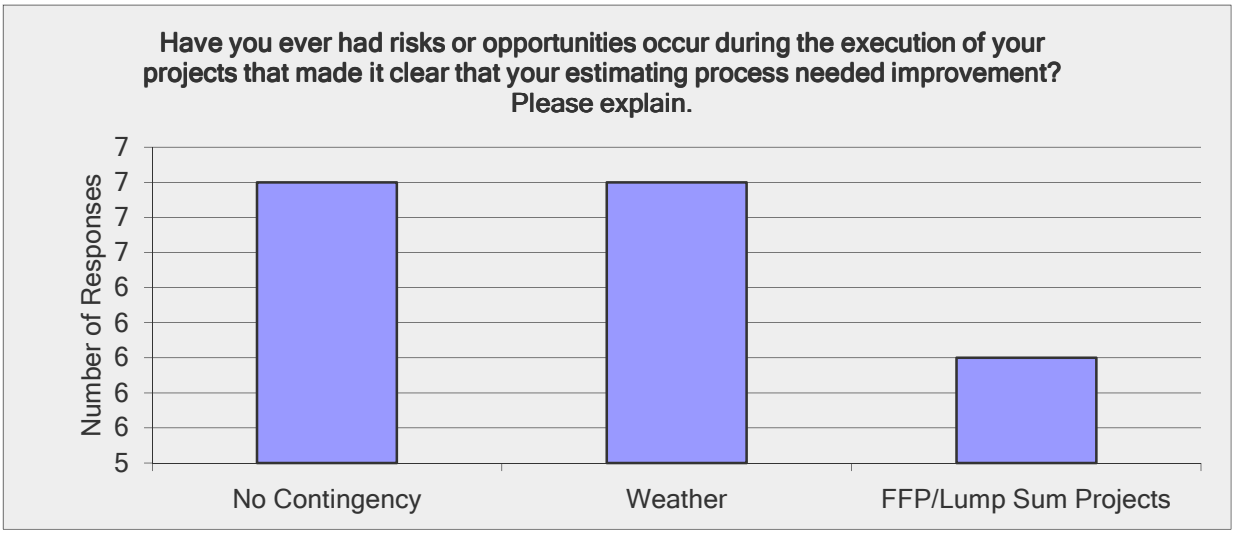


Exhibit 7: Top Three Risk Occurrences and Estimating Improvement Process Results

Question number 7 was an Alaska-specific question that asked what causes one to plan projects differently when working in Alaska. The highest results are detailed in Exhibit 8:

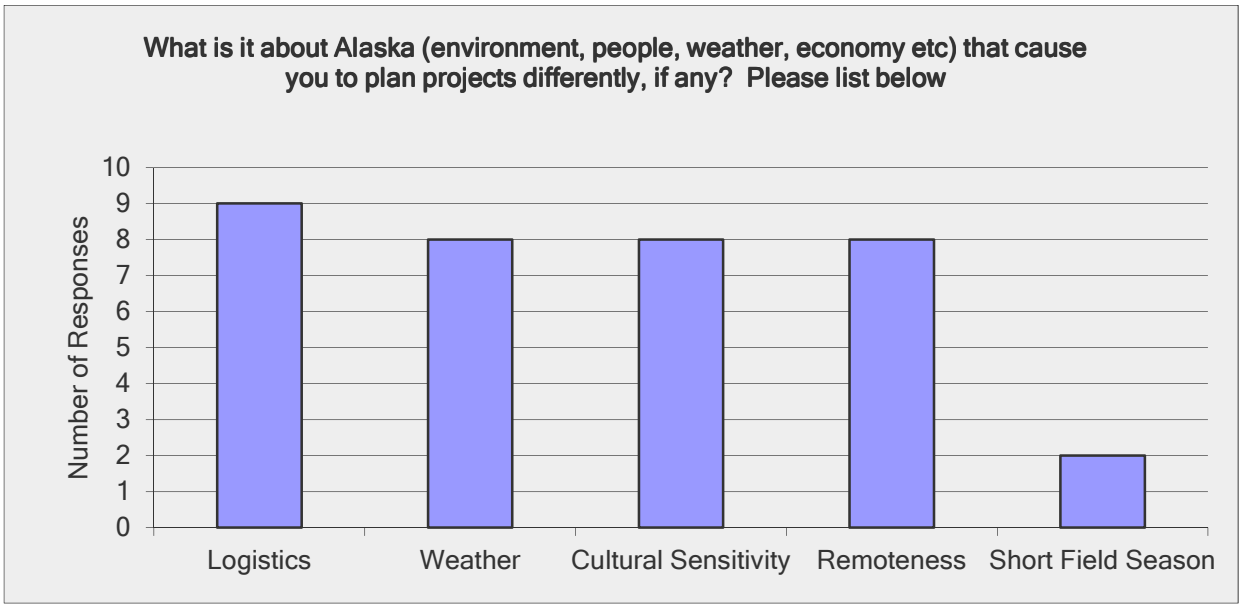


Exhibit 8: Top Five Reasons Projects are Planned Differently in Alaska

Root cause analysis (RCA), question number 8, was an area of interest identified in the survey results. When the question was posed to the respondents if their company uses RCA, it was a 50% split down the middle between companies that did use RCA and those that did not, see Exhibit 9. One possibility of whether or not a company uses RCA could be related to the company's size as larger companies may adopt more formal risk management approaches than a smaller company.

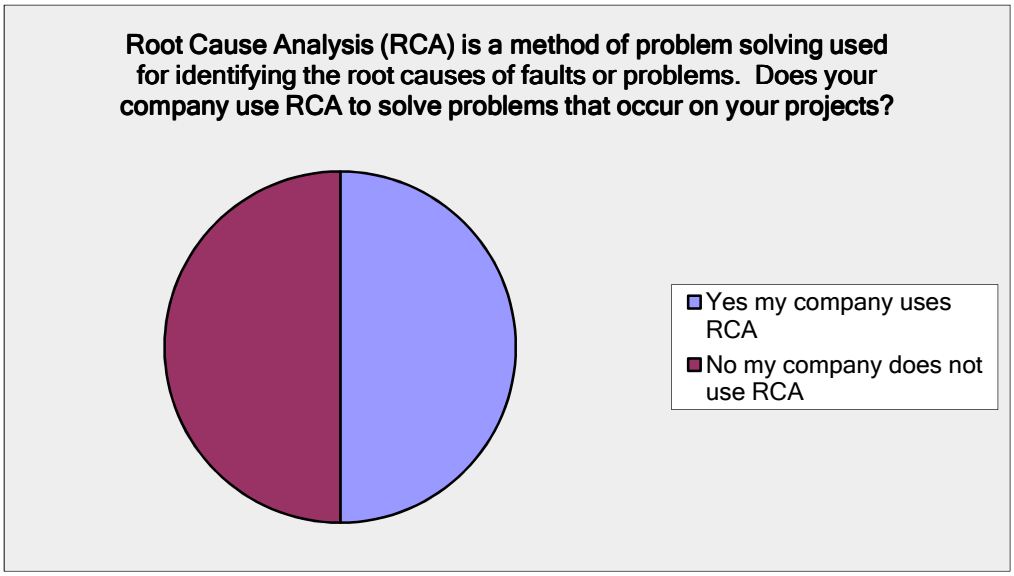


Exhibit 9: Companies That Use Root Cause Analysis

Question number 9 asked if a company uses RCA, are there trends or consistencies and whether or not RCA provides results or not. The data indicate that RCA can provide results in many different areas. There were two respondents that both replied that RCA provided the best results when it came to safety. Another two respondents that said that RCA does not solve problems that occur on projects, but it should. Other responses stated that RCA drives corrective action, helps solve issues with logistics, and can also be unfortunately used as a tool that management uses for placing blame on project employees or team members when planning assumptions did not hold. This ultimately nullifies the benefits of the concept.

Question number 10 asked if the company did not use RCA, and rather addresses risks or problems as they occur, if this method worked well for them or not, see Exhibit 10. Surprisingly many respondents stated that in many situations in their experience in Alaska, non-predictable events occur and one cannot perform an analysis on everything. Also, RCA is more reactive than proactive and that ongoing dialogue is a better way to deal with challenges that arise unannounced rather than evaluating the 'root cause' every time.

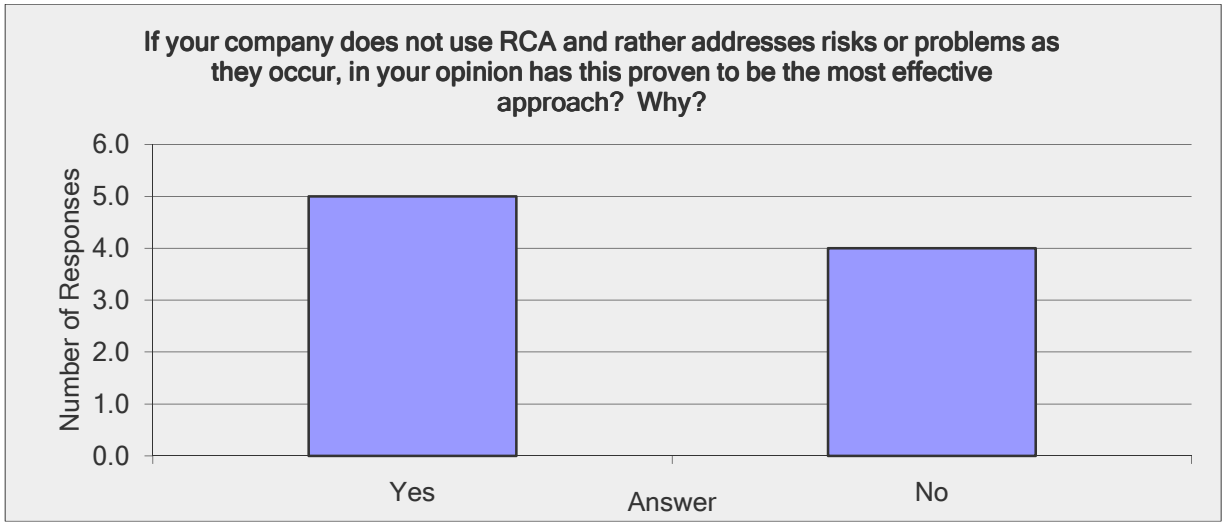


Exhibit 10: Addressing Risk As It Occurs As Compared To Using RCA

The final question in the survey was whether or not any respondents had any final thoughts on risk management characteristics of environmental consulting companies in Alaska. Results indicated that understanding the regulatory agency climate is crucial and that, there is always an element of risk when doing remote fieldwork and that success is dependent upon the project team. One respondent said that the

low price market is pushing hungry firms to take greater risks and that smart companies are winning less work as a result.

Data Validation From Survey

Upon completion of the survey and the creation of the PPM tool, the PPM tool was sent out to survey respondents for feedback and comment. There were four respondents that provided feedback on the PPM tool. One common element from the respondents was that each of the categories in the PPM tool should be weighted appropriately. At this time, each category is weighted equally; however, 'weather' and 'scope of work' are two elements that could be scored and weighted differently as scope of work has a much higher consequence on a project than weather does. In addition, better clarification needs to be made on the specific use of each tool. While it might make sense to those directly in the industry, further explaining what the tool can do would add value as per a respondent's recommendation. An area where respondents said the tool added value was when determining a 'go/no-go' decision during the proposal phase or when choosing to bid on a project. One respondent said that the tool "visually shows where a project falls and might help with negotiating with upper management". Further feedback indicated that this tool may need to be different from small companies as compared to larger companies. A small company may be willing to take more risk as compared to a larger firm; therefore their ideal risk portfolio may be different than a large firm as a larger firm may not be willing to take as much risk. Finally, while a project can score higher than 100 on the Project Portfolio Positioning Tool, the Portfolio Management Tool does not support a score higher than 100.

Based off of the data validation and feedback received from respondents, changes were made to the PPM tool. Specifically, more detail was added describing the intent of the tool. Receiving feedback from peers and colleagues helped to align the focus around identifying where the PPM tool could be improved in the future.

Conclusion

From the results of the data analysis and data validation, common themes on the unique challenges of conducting environmental consulting work in Alaska are evident. Weather, logistics, remote locations, communication, and cultural sensitivity are all examples of why Alaska is such a challenging place to work as compared to other locations throughout the United States. Many answers to the survey regarding risk factors were similar for employees of different types of environmental consulting companies across the state, as there were numerous areas where many respondents from the survey had the same answer. This indicated that there are certain elements of conducting work in Alaska where the risk is the same no

matter what company one might work for. Consequently, for companies to better manage risk in their portfolio of projects, a PPM tool can be designed to be Alaska specific and address some of the commonly identified risks that these types of companies face in Alaska.

The literature review further solidified the fact that risk management and project portfolio management are directly aligned and can benefit each other greatly. Portfolio management when done correctly can achieve the following:

- Manage resources effectively
- Manage stakeholder value
- Capitalize on opportunities
- Minimize the impact of threats
- Respond to changes in the market, legal, and regulatory environments
- Reinforce focus on critical operational activities

Integrating a risk management element into portfolio management allows risk to become a part of the company's strategic goals as well as bring up potential risk factors that had not been thought of prior to taking on or executing a project. A project portfolio management tool can be utilized to identify risks as well as score the project on where it fits within the company's portfolio of projects.

Recommendation

Considering the background of the project, the literature review and data analysis conclusions, a PPM tool specific to Alaska environmental companies was developed, as described and presented in Appendix A. It defines common or important risks specific to Alaska that were identified in the survey. Any project in an environmental consulting company's portfolio in Alaska, can be scored based off of the company's strategic goals and the Alaska-specific risks the project may encounter. Once the project is scored as show in exhibit 11, the result is plotted on a graph and one can visually see where the project may fall within the portfolio of projects as shown in exhibit 12.

Product Development

Exhibit 11identifies the first page of the excel version of the PPM tool. The intended use of the tool and the instructions are not included in this screenshot, however, the categories and ranking system are identified. The 'Total' column is where the potential project is scored based on a factor of high, medium, or low. It can be shown in the example below that the project scored a '38'. From there the project is plotted on a second tab on the excel sheet, Exhibit 12.

Project Portfolio Positioning Tool for Environmental Consulting Companies in Alaska				
	1 Point	5 Points	10 Points	Total
Organizations Strategic Development				
Strategic Fit	**Low** Business line has not been previously worked in	**Medium** Project is within Core Business Model	**High** Fits with Organizations Targeted Growth Area	Low
Resources Required	**Low** Organization will need to hire personnel	**Medium** Organization may need to bring in staff from another office	**High** Organization can staff project in-house	Low
Technical Feasibility	**Low** A subject matter expert/ subcontractor will need to be included in costing	**Medium** Will need external company expertise	**High** Internal Staff have technical expertise	Low
Financial Value	**Low** Less than $500,000	**Medium** $500,000 to $1M	**High** More than $1M	Low
Alaska Focused Risk Factors				
Weather	**Low** Weather has historically affected this site/location	**Medium** Weather could potentially affect fieldwork or flights	**High** Weather delays have typically not happened at this site	Low
Scope of Work	**Low** Poor scope of work with many holes	**Medium** Scope of work is not well defined, many assumptions will have to be made	**High** Well defined scope of work	Low
Logistics/Remoteness	**Low** Site is located in remote part of the state (charter flights, barges etc necessary)	**Medium** Accessible by commercial flight	**High** Location accessible by main roads and vehicle	High
Regulatory Complexity	**Low** Strained relationship between agencies and client. Agency has historically been unresponsive	**Medium** Lack of coordination/communcation between agencies and client, but working relationship	**High** Familarity with agencies, high engagement during planning process/defining scope of work	High
Client Expectations	**Low** Expectations are not well defined	**Medium** Expectations are somewhat defined, but will need to be better defined later	**High** Expectations are well defined and detailed assumptions are included	High
Communication with Client	**Low** Poor communication with infrequent check-ins	**Medium** Communication does not happen often, room for improvement	**High** Client communication happens often, project objectives/scope are clear	Low
Fully Understand Site Conditions	**Low** No proof of fully delineated site, unsure of cultural sensitivities, weather, logistics	**Medium** Somewhat understand extent of contamination, familiar with community, climate etc	**High** Worked in area before, conducted previous work on site, comfortable with knowledge of site conditions	Low
Project Score				
				38.00

Exhibit 11: Project Portfolio Positioning Tool

The second tab in the excel file that is part of the PPM tool is the actual tool itself where the score from the project portfolio positioning tool is plotted. The data is plotted on an x/y axis where strategic value and risk are the two main factors based off of the scoring from the project portfolio positioning tool. The highest ranking score goes in the upper left hand corner where 'high value and low risk' is located and shaded in green. The 'low value and high risk' area is located in the lower right hand corner and shaded in red. This model was based off of PMI's power/interest grid structure used for stakeholder identification. To keep with PMI's model, this tool was built in a similar fashion with the highest ranking or highest 'power' being located in the upper left hand corner.

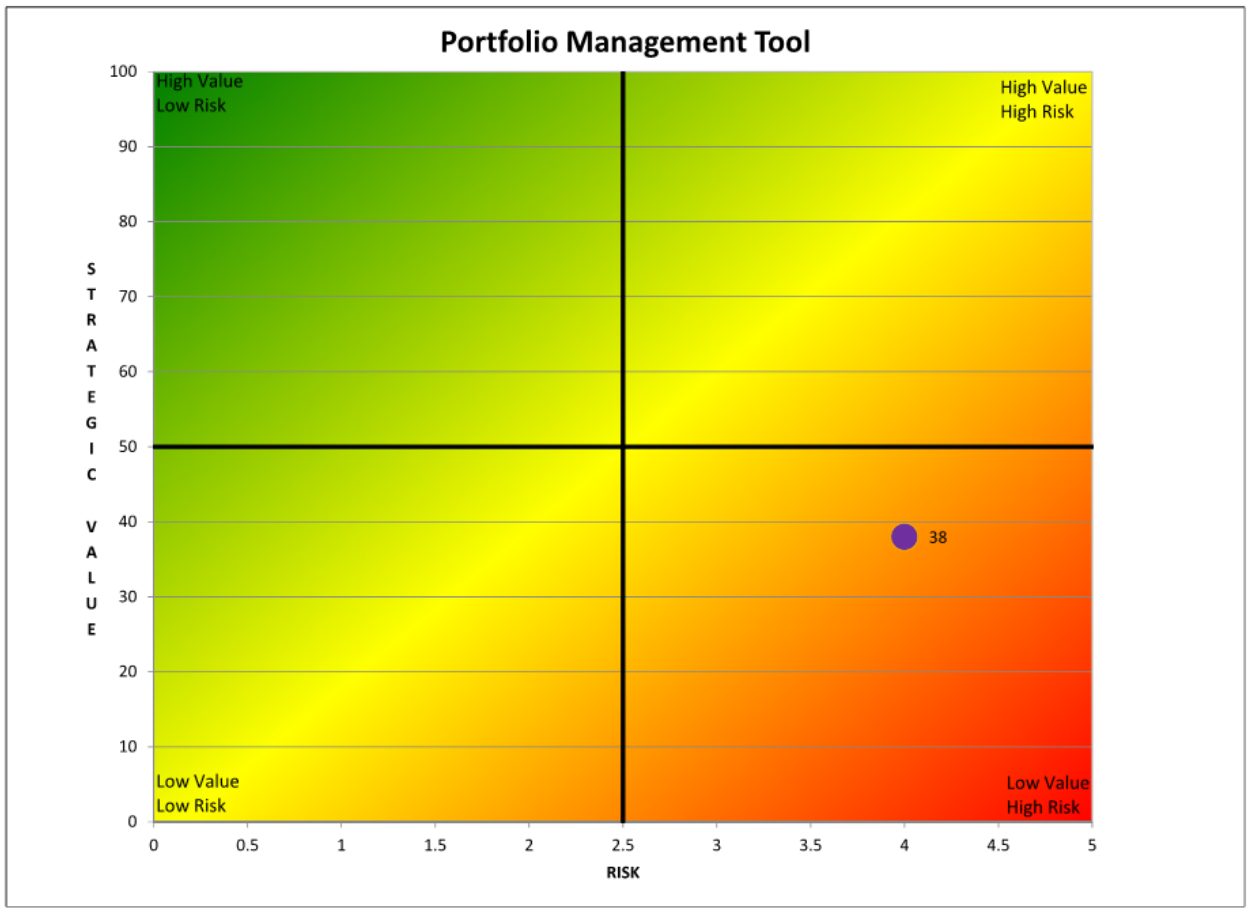


Exhibit 12: Portfolio Management Tool

Project Conclusion

The following critical success factors listed in the project management plan were met:

- Project is completed on schedule.
- Research Paper meets Stakeholder Requirements
- Create an operable and functioning PPM Tool

One critical success factor with a target completion date in January 2017 is submission of a research paper to the PMI.

This final critical success factor has a specific date which is beyond the end of the school term. Final review and submission of research paper to PMI will be completed before the January 2017 deadline.

The following criteria earlier specified has been met by the final deliverable of this research and the research can be deemed successfully completed.

A deliverable will be accepted by the Sponsor if it meets the following criteria:

- All stakeholder requirements have been met or completed and accounted for in the work breakdown structure (WBS) and Project Schedule.
- PPM Tool is in alignment with the Project Managers Company's strategic values
- PPM Tool can be utilized by the Project Manager's Company

Recommendations for Further Research

There are many reasons why project portfolio management is important in Alaska and, more specifically, why managing risk in a company's portfolio of projects can provide value to an environmental consulting company operating in Alaska. Further research after conducting a literature review and data analysis would be to create a PPM tool that has individual Alaska-based risks and strategic value ranked individually. For instance, weather as an evaluated risk factor may not be as high of a priority to a company than scope of work. At this time the PPM tool equally weights all of the scoring criteria the same. Data validation of the PPM tool indicated that feedback from the survey respondents would prefer a tool with more description in the beginning on what the tool is used for in addition to addressing or including risk mitigation measures as these are currently not assessed in the PPM tool. Further research could also be taken by taking the PPM tool one step further and scoring the individual project, then having that project added to a larger portfolio management tool where numerous projects in a company's portfolio are already plotted therefore identifying where that project falls within the company's already existing projects.

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Appendix

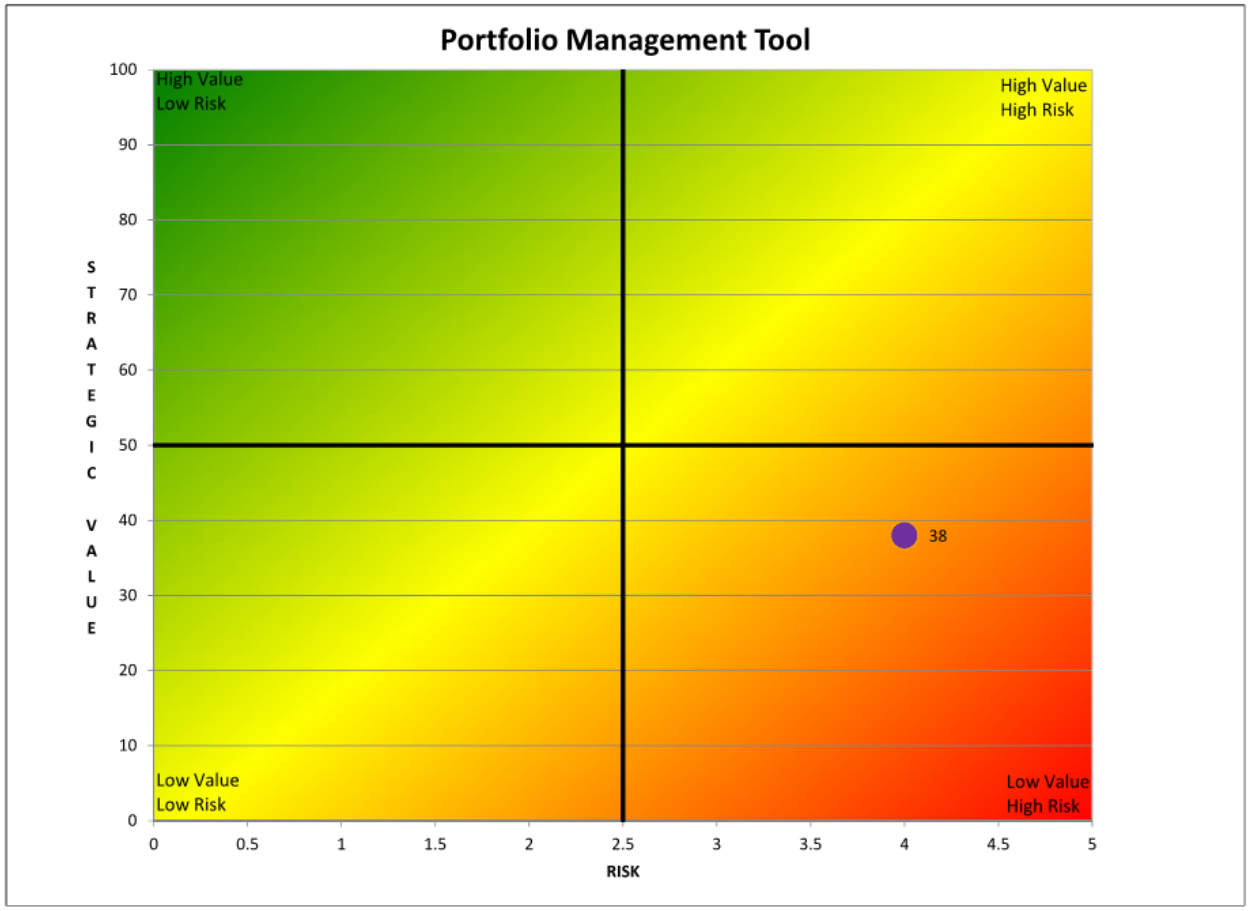
Project Portfolio Management Tool

Background: This Project Portfolio Positioning Tool is meant to go in conjunction with the Project Portfolio Management Tool. This tool is meant to assist with determining a 'Go/No-Go' decision when bidding or considering to bid on a project. It provides a visual element and can assist with determing the 'up-side, down-side' of a potential project or identify elements or places where profit could be maximized.

Instructions: Fill out the total column based on the known details of the project. Score the project with a ranking of low, medium, or high based on the descriptions of each category below. A score will be generated at the bottom of the column. Select tab 2 the Portfolio Management Tool tab which identifies where the project falls within the spectrum of strategic value to the company and risk.

Project Portfolio Positioning Tool for Environmental Consulting Companies in Alaska

	1 Point	5 Points	10 Points	Total
Organizations Strategic Development				
Strategic Fit	**Low** Business line has not been previously worked in	**Medium** Project is within Core Business Model	**High** Fits with Organizations Targeted Growth Area	**Low**
Resources Required	**Low** Organization will need to hire personnel	**Medium** Organization may need to bring in staff from another office	**High** Organization can staff project in-house	**Low**
Technical Feasibility	**Low** A subject matter expert/ subcontractor will need to be included in costing	**Medium** Will need external company expertise	**High** Internal Staff have technical expertise	**Low**
Financial Value	**Low** Less than $500,000	**Medium** $500,000 to $1M	**High** More than $1M	**Low**
Alaska Focused Risk Factors				
Weather	**Low** Weather has historically affected this site/location	**Medium** Weather could potentially affect fieldwork or flights	**High** Weather delays have typically not happened at this site	**Low**
Scope of Work	**Low** Poor scope of work	**Medium** Scope of work is not well defined, many assumptions will have to be made	**High** Well defined scope of work	**Low**
Logistics/Remoteness	**Low** Site is located in remote part of the state (charter flights, barges etc necessary)	**Medium** Accessible by commercial flight	**High** Location accessible by main roads and vehicle	**High**
Regulatory Complexity	**Low** Strained relationship between agencies and client. Agency has historically been unresponsive	**Medium** Lack of coordination/communcation between agencies and client, but working relationship	**High** Familarity with agencies, high engagement during planning process/defining scope of work	**High**
Client Expectations	**Low** Expectations are not well defined	**Medium** Expectations are somewhat defined, but will need to be better defined later	**High** Expectations are well defined and detailed assumptions are included	**High**
Communication with Client	**Low** Poor communication with infrequent check-ins	**Medium** Communication does not happen often, room for improvement	**High** Client communication happens often, project objectives/scope are clear	**Low**
Fully Understand Site Conditions	**Low** No proof of fully delineated site, unsure of cultural sensitivities, weather, logistics	**Medium** Somewhat understand extent of contamination, familiar with community, climate etc	**High** Worked in area before, conducted previous work on site, comfortable with knowledge of site conditions	**Low**
Project Score				
				38.00


Portfolio Management Tool
High Value
Low Risk
High Value
High Risk
Low Value
Low Risk
Low Value
High Risk
38
STRATEGIC VALUE
RISK
100
90
80
70
60
50
40
30
20
10
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5